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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 54035PCT KMC:PFB	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International Application No. PCT/AU2003/001252	International Filing Date (day/month/year) 24 September 2003	Priority Date (day/month/year) 24 September 2002
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ C05F 1/02, 17/00, 17/02, 1/00, 9/02		
Applicant CS ASSOCIATED PTY LTD et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheet(s).

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 3 February 2004	Date of completion of the report 8 December 2004
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer  O.L. CHAI Telephone No. (02) 6283 2482

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/AU2003/001252

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed.
- ☒ the description, pages 1-7, 12 as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☒ the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages 8-11 received on 23 June 2004 with the letter of 23 June 2004
- ☒ the drawings, pages 1-2 as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☐ the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.

- ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/AU2003/001252

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-21	YES
	Claims	NO
Inventive step (IS)	Claims	YES
	Claims 1-21	NO
Industrial applicability (IA)	Claims 1-21	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

The following documents identified in the International Search Report have been considered for the purposes of this report:

- D1 WO 2000037393
- D2 WO 1996007624
- D3 CA 2114350

A further document D4 US 4108609 is also considered.

The application relates to an apparatus and a method for the treatment of composting material where the aqueous liquid is held at a level lower than any one or more of the gaseous outlets effecting gaseous distribution below the composting material.

Novelty (N) and Inventive Step (IS)

D1 discloses a method of composting high protein waste in an apparatus that has most of the essential features as disclosed in claim 1, see especially figure 2/2 and claims 15-18. There is no mention of a sump to collect the aqueous liquid from the decomposition process in D1. Therefore the subject matter of the application is new and meets the requirements of Article 33(2) PCT with regard to novelty.

D4 discloses a compost container including a base section for receiving fertilizer sap, the two sections being divided by a floor and there is a means for removing the fertilizer sap. D4 therefore discloses the only integer which is absent from the document D1. The subject matter of the application is therefore obvious and does not meet the requirements of Article 33(3) PCT with regard to inventive step when D1 and D4 are considered together.

D2 discloses an apparatus and a process for controlling the composting air in a composting system. D2 does not disclose the essential features of the present claims. It is considered that claims 1-21 are novel and inventive in light of D2.

D3 discloses a process for recirculating a variable amount of air back into the material being composted. D3 does not disclose the essential features of the present claims. It is considered that claims 1-21 are novel and inventive in light of D3.

Industrial Applicability (IA)

The invention defined in the claims is considered to meet the requirements of industrial applicability under Article 33(4) of the PCT.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS :

1. Apparatus for the composting of material which includes a container which has an openable lid which closes with respect to its surrounding perimeter by means of a resilient seal so as to provide a substantially airtight closure with the container, across the bottom of the container being a series of conduits which have a plurality of holes passing through the walls thereof which are collectively fed to a single exiting conduit which feeds into a pump and through a filter back into a supply conduit, wherein the aqueous liquids formed during treatment are held at a level lower than that of the supply conduits, by a combination of a sump below the supply conduits and floor means to hold the material being treated above the sump.
2. The apparatus of claim 1, further characterized in that the floor means has a plurality of apertures disposed thereon.
3. The apparatus of claim 1 or 2, in that the floor means is sloping.
4. The apparatus of claim 3, wherein the plurality of apertures disposed on floor means are located at a lowermost point to allow liquid to pass through and into the sump.
5. The apparatus of anyone of the preceding claims further characterized in that there is a pump means to pump the liquid from the lowermost area to disperse over the top of the material to be composted
6. The apparatus of any one of claims 1-5 further characterized in that there are means with which to access the liquid in the sump from outside the container.

7. The apparatus as in any one of the preceding claims further characterized in that there are number of chambers in connection with the lowermost for isolation of the liquid material produced.

8. A method of treating materials to be composted which includes the steps
5 of containing such materials within the closed container as described in any of the apparatus claims then effecting a first covering of woodchips then successively a layer of organic material to be composted and a layer of absorbing woodchips, pumping air into the container at one part of the contained body of material, and taking the air having passed through the
10 material from the container so that it, and it only, will be substantially recirculated back to an introduction location of the material so that gaseous products of any decomposition of the materials will be kept within the container or its connected conduits, the liquid formed as a result of the composting passing through the floor means and held at a level lower than that of the.
15 supply conduits.

9. The method of claim 8, wherein the collected liquid is extracted from the lower most level and reintroduced in to the top of the container.

10. The method of claim 9, wherein the extraction of liquid and reintroduction to the top of the container is effected from time to time through the period of
20 composting.

11. The method of claim 8, wherein the liquid is collected and held for a period of time to encourage bacteria growth.

12. A method of treating materials to be composted as in any one of claims 8-11 further characterised in that there are conduits attached to the container
25 which are also coupled to an air pump so that the air pump will cause the air to be extracted through one conduit and to be introduced back into the container through the other conduit.

13. A method of treating materials to be composted as in any one of claims 8-12 further characterised in that the recirculation is effected from time to time through the period of composting.
14. A method of treating materials to be composted as in any one of
5 claims 8-13 further characterised in that the recirculation of the air and gases is through a biofilter in the pathway of such recirculating gases.
15. A method of treating materials to be composted as in the immediately preceding claim further characterised in that the biofilter includes compost or similar organic material through which the air to be filtered is passed.
- 10 16. A method of composting as in any one of claims 8-15 wherein the layer of organic material to be composted is a layer of bodies.
17. A method of composting materials as in any one of claims 8-16, which are high in protein content including the steps of holding the composting materials in a closed container and recycling through the material substantially
15 only the air and any resultant gases given off from the composting materials.
18. A method as in the immediately preceding claim further characterised in that there are means to effect a cyclic operation of a pump so that it can be switched on and switched off over a decomposing period according to a pre-arranged program.
- 20 19. A method of composting which includes the steps of placing the materials to be composted into a container, sealing the container and then blowing in a recycling manner substantially only the air and gases contained within the container through the composting materials for a period of time to collect and distribute ammonia sufficient to allow for a substantial buildup in
25 concentration to a pathogen killing level of ammonia derived from the composting materials, maintaining such circulation for a sufficient period of time

so as to effect a substantial pathogen kill in the composting material, and then collecting the liquid produced during the composting from a chamber positioned below the level of the material.

20. A method as in one of the preceding method claims further
5 characterised in that the composting materials are placed in layers with materials separating the respective layers, which are porous.

21. The apparatus as substantially as hereinbefore described with reference to the accompanying drawings.

Dated this 23rd day of June 2004.

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C S ASSOCIATED PTY LTD
By their Patent Attorneys
COLLISION & CO.

CLAIMS

1. Apparatus for the composting of material which includes a container which has an openable lid which closes with respect to its surrounding perimeter by means of a resilient seal so as to provide a substantially airtight closure with the container, across the bottom of the container being a series of conduits which have a plurality of holes passing through the walls thereof which are collectively fed to a single exiting conduit which feeds into a pump and through a filter back into a supply conduit, wherein the aqueous liquids formed during treatment are held at a level lower than that of the supply conduits.
2. The apparatus of claim 1, further characterized in that there is sump below the supply conduits.
3. The apparatus of claim 2, further characterized in that there is a floor means to hold the material being treated above the sump.
4. The apparatus of claim 3, further characterized in that the floor means has a plurality of apertures disposed thereon.
5. The apparatus of claim 2 or 3, in that the floor means is sloping.
6. The apparatus of claim 5, wherein the plurality of apertures disposed on floor means are located at a lowermost point to allow liquid to pass through and into the sump.
7. The apparatus of anyone of the preceding claims further characterized in that there is a pump means to pump the liquid from the lowermost area to disperse over the top of the material to be composted
8. The apparatus of anyone of claims 1-6 further characterized in that there are means with which to access the liquid in the sump from outside the container.
9. The apparatus as in any one of the preceding claims further characterized

in that there are number of chambers in connection with the lowermost for isolation of the liquid material produced.

10. A method of treating materials to be composted which includes the steps of containing such materials within the closed container as described in any of the apparatus claims then effecting a first covering of woodchips then successively a layer of organic material to be composted and a layer of absorbing woodchips, pumping air into the container at one part of the contained body of material, and taking the air having passed through the material from the container so that it, and it only, will be substantially recirculated back to an introduction location of the material so that gaseous products of any decomposition of the materials will be kept within the container or its connected conduits, the liquid formed as a result of the composting passing through the floor means and held at a level lower than that of the supply conduits.
 11. The method of claim 10, wherein the collected liquid is extracted from the lower most level and reintroduced in to the top of the container.
 12. The method of claim 11, wherein the extraction of liquid and reintroduction to the top of the container is effected from time to time through the period of composting
 13. The method of claim 10, wherein the liquid is collected and held for a period of time to encourage bacteria growth.
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14. A method of treating materials to be composted as in any one of claims 10-13 further characterised in that there are conduits attached to the container which are also coupled to an air pump so that the air pump will cause the air to be extracted through one conduit and to be introduced back into the container through the other conduit.
 15. A method of treating materials to be composted as in any one of claims 10-14 further characterised in that the recirculation is effected from time to time through the period of composting.
 16. A method of treating materials to be composted as in any one of claims

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ART 34 AMDT

10-15 further characterised in that the recirculating air and gaseous is through a biofilter in the pathway of such recirculating gases.

17. A method of treating materials to be composted as in the immediately preceding claim further characterised in that the biofilter includes compost or similar organic material through which the air to be filtered is passed.
18. A method of composting as in any one of claims 10-17 where in the layer of organic material to be composted is a layer of bodies.
19. A method of composting materials as in any one of claims 10-18, which are high in protein content including the steps of holding the composting materials in a closed container and recycling through the material substantially only the air and any resultant gaseous give off from the composting materials.
20. A method as in the immediately preceding claim further characterised in that there are means to effect a cyclic operation of a pump so that it can be switched on and switched off over a decomposing period according to a pre-arranged program.
21. A method of composting which includes the steps of placing the materials to be composted into a container, sealing the container and then blowing in a recycling manner substantially only the air and gases contained within the container through the composting materials for a period of time to collect and distribute ammonia sufficient to allow for a substantial buildup in concentration to a pathogen killing level of ammonia derived from the composting materials, maintaining such circulation for a sufficient period of time so as to effect a substantial pathogen kill in the composting material, and then collecting the liquid produced during the composting from a chamber positioned below the level of the material.
22. A method as in one of the preceding method claims further characterised in that the composting materials are placed in layers with materials separating the respective layers, which are porous.

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ART 34 AMDT

23. The apparatus as substantially as hereinbefore described with reference to the accompanying drawings.